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PATENTS

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Applicant(s): M. Raghunath

Examiner: Ryan R. Yang

Serial No: 09/607,801

Art Unit: 2672

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Docket: YOR920000238US1 (13572)

For: METHOD AND APPARATUS FOR DYNAMICALLY CONTROLLING SCROLLER SPEED EMPLOYED FOR A USER INTERFACE OF A WEARABLE APPLIANCE

Dated: August 12, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 1450

BRIEF ON APPEAL

Sir:

INTRODUCTION

Pursuant to the provisions of 35 U.S.C. §134 and 37 C.F.R. §§1.191 and 1.192, Appellants submit this Brief on Appeal in perfection of their appeal from the Final Rejection of Claims 1, 3, 7, 8 and 10-20 on March 12, 2003 in the above-identified patent application.

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 12, 2003.

Dated: August 12, 2003

Steven Fischman

1. REAL PARTY OF INTEREST

The real party of interest in the above-identified patent application is International Business Machines Corporation.

2. RELATED APPEALS AND INTERFERENCES

The present application is involved in no other appeal or interference besides the present Appeal.

3. STATUS OF THE CLAIMS

The present application, U.S. patent application serial No. 09/607,801 was filed on June 30, 2000 with Claims 1-20.

In a first Office Action dated October 4, 2002, the Examiner had rejected Claims 1-3 and 7-20, but indicated that Claims 4-6 would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims. In applicants' response dated January 3, 2003, Arguments in favor of patentability were proffered with amendments to the Claims 1, 2, 10, 16 and 19 to clarify and further set forth patentable features in traversal of the rejection of Claims 1-3 and 7-20.

In a second Office Action dated March 12, 2003, constituting the Final Rejection to which this Appeal is directed, the Examiner had finally rejected Claims 1, 3, 7, 8 and 10-20 on various grounds, but indicated that Claims 2, 4-6 and 9 would be allowable if rewritten in independent form including all of the limitation of the base claim and any intervening claims. In applicants' response after Final Rejection dated May 8, 2003, arguments in favor of patentability were proffered with amendments to the Claims 1, 16 and 19 to clarify patentable features in traversal of the rejection of Claims 1, 3, 7, 8 and 10-20.

In an Advisory Action dated June 16, 2003, the Examiner indicated that the amendments proferred in applicants' May 8, 2003 response after Final Rejection will be entered.

Thus, the status of the claims are that Claims 1-20 are pending and, Claims 1, 3, 7, 8 and 10-20 are the claims finally rejected and on appeal with remaining Claims 2, 4-6, and 9 objected to. A copy of each of the claims in the form compliant with 37 C.F.R. §1.192(c), is attached hereto in the Appendix.

4. STATUS OF THE AMENDMENTS

In Applicants' response under 37 C.F.R §1.116 submitted of May 8, 2003 in response to the Final Rejection, Applicants sought entry of remarks containing arguments for patentability and proffered amendments to Claims 1, 16 and 19.

In an Advisory Action dated June 16, 2003, the Examiner indicated that the proposed amendments to Claims 1, 16 and 19 in the applicant's response dated May 8, 2003 would be entered.

5. SUMMARY OF THE INVENTION

The present invention is generally directed to a wearable device/appliance (particularly, a wrist watch) capable of wirelessly accessing information and equipped with an interactive user interface and high resolution display for providing a variety of desktop PC-like functions. The wrist watch (device/appliance) is web-enabled and equipped with an interactive user interface including a scroll device, e.g., roller ball, wheel or dial-type controller, for enabling scrolling through text and graphics displayed via the user interface.

The claims to which the invention is particularly directed, is a scroll device implementing a dynamic scroll speed controller for enabling fine-grain and coarse-grain

positioning of a scroll and/or cursor positioning of displayed content in a manner seamless to the user.

A first embodiment of the invention set forth in amended Claim 1 on Appeal is directed to a method for dynamically controlling speed of a scroll device providing scroll functions for setting time of a time keeping display having minute and hour indicators. The scroll device generates scroll signals representing scroll events and communicates the signals to a control device for advancing minute and hour display indicators in response thereto. Particularly, in the method, first scroll signals are received from the scroll device to incrementally advance a time keeping display indicator (e.g., indicator elements 360, 362 in the wrist watch display of Figures 5(a) and 5(b)) which correspond to hour hand 370 and minute hand 372, respectively, for setting an alarm notification time in hours and minutes) in a first direction according to fine-grain time increments. The advancing direction of the indicator is simultaneously tracked. In a second step of the method, the received first scroll signals are counted and, thereafter, in response to continued receipt of first scroll signals, the time keeping display minute indicator is seamlessly advanced according to coarse-grain time increments in a first direction when a count of said received first scroll signals exceeds a predetermined number. Specifically, the coarse-grain time increments are greater than said fine-grain time increments so that fewer scroll device manipulations are required to achieve a desired time set without notice to the user.

The objected to Claim 2 dependent upon Claim 1 is directed to further method steps for receiving second scroll signals in response to manipulating the scroll device to change direction of the time keeping display minute indicator, determining a change in direction; and, incrementally advancing the time keeping display minute indicator in the changed direction according to fine-grain time increments, wherein said time keeping display minute indicator

movement is changed from coarse-grain time movement in said first direction to fine-grain time movement in the changed direction.

The appealed Claim 3 dependent upon Claim 1 sets forth the fine-grain time increments of said display indicator as corresponding to one (1) minute increment per scroll event.

The objected to Claim 4 dependent upon Claim 3 sets forth the coarse-grain time increments of the display indicator as corresponding to five (5) minutes increments per scroll event and, objected to Claim 5 dependent upon Claim 4 sets forth a step of incrementally advancing display minute indicator a pre-determined number of time increments per one or more scroll events and increasing the pre-determined number for each subsequent one or more scroll event(s). The objected to Claim 6 dependent upon Claim 5 sets forth further method steps for receiving second scroll signals in response to manipulating the scroll device to change direction of the time keeping display minute indicator, determining a change in direction; and, incrementally advancing the time keeping display minute indicator in the changed direction according to fine-grain time increments and simultaneously tracking said advancing direction.

The appealed Claim 7 dependent upon Claim 1 sets forth the step of using the scroll device for incrementing advancing a time keeping display hour indicator in a first direction according to received first scroll signals, and simultaneously tracking said advancing direction, and appealed from Claim 8, dependent upon Claim 7 is directed to further steps of receiving second scroll signals in response to manipulating said scroll device to change direction of said time keeping display hour indicator, determining the change in direction; and, incrementally advancing the time keeping display hour indicator in the changed direction according to fine-grain time increments, and simultaneously tracking the advancing direction.

Appealed from Claim 9 dependent upon Claim 7 is directed to further steps of generating click events in response to manipulation of the scroll device, and generating third

scroll signals corresponding to the click events for communication to the control device, and further comprising the step of: independently enabling scroll device control of either said time keeping display minute indicator or said time keeping display hour indicator upon receipt of a third scroll signal.

A second embodiment of the invention set forth in amended Claim 10 on Appeal is directed to a system for dynamically controlling scrolling functions for a display indicator capable of navigating through a high-resolution display provided in a wearable appliance that displays textual or graphical content. The system comprises: a scroll device for manipulation by a user to provide said scrolling functions for advancing the indicator, the scroll device generating scroll events; and, a control device for receiving the scroll events, tracking an advancing direction of said indicator by counting received scroll events, and providing dynamic speed control of the indicator by advancing the indicator according to fine-grain and coarse-grain increments in response to a count of said received scroll events and the tracked direction, such that dynamic speed control is seamless to the user.

Appealed from Claims 11-15 are dependent upon and further limit amended Claim 10.

A third embodiment of the invention set forth in amended Claim 16 on Appeal is directed to a program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for dynamically controlling scrolling functions for a display indicator capable of navigating through a display provided in a wearable appliance that displays textual or graphical content, the appliance implementing a scroll device for generating scroll events in response to user manipulation thereof, wherein the method steps include the steps of: a) receiving scroll events for incrementally advancing the indicator per scroll event in a first direction to provide fine-grain scroll indicator movement, and simultaneously tracking the advancing direction; b) counting the received scroll events; and, c)

thereafter, in response to continued receipt of scroll events, providing in a manner that is seamless to a user, coarse-grain scroll indicator movement by advancing the indicator for a pre-determined number of increments per scroll event in the first direction when a count of the received scroll events exceeds a predetermined number, the coarse-grain scroll indicator movement being greater than the fine-grain scroll indicator movement, such that fewer scroll device manipulations are required to achieve a desired scroll indicator position on the display.

Appealed from Claims 17-18 are dependent upon and further limit amended Claim 16.

A fourth embodiment of the invention set forth in amended Claim 19 on Appeal is directed to a method for dynamically controlling scrolling functions for a display indicator capable of navigating through a display provided in a wearable appliance that displays textual or graphical content, the appliance implementing a scroll device for generating scroll events in response to user manipulation thereof, the method comprising the steps of: a) receiving scroll events for incrementally advancing the indicator per scroll event in a first direction to provide fine-grain scroll indicator movement, and simultaneously tracking the advancing direction; b) counting the received scroll events; and, c) thereafter, in response to continued receipt of scroll events, providing in a manner that is seamless to a user, coarse-grain scroll indicator movement by advancing said indicator for a pre-determined number of increments per scroll event in said first direction when a count of said fine-grain indicator increments exceeds a predetermined number, said coarse-grain scroll indicator movement greater than said fine-grain scroll indicator movement, whereby fewer scroll device manipulations are required to achieve a desired scroll indicator position on the display.

Appealed from Claim 20 is dependent upon and further limits amended Claim 19.

6. THE ISSUES

The issues presented for review are: 1) whether Claims 1, 3, 7, and 10-14 and 16-20 are anticipated by Will (U.S. 5,477,508); and 2) whether Claims 8 and 15 are unpatentable over Will (U.S. 5,477,508)?

7. GROUPING OF THE CLAIMS

The prior art rejections of issue herein apply to more than one claim. Despite this, Appellants submit that the rejected claims stand or fall together.

8. ARGUMENTS

The rejection of Claims 1, 3, 7, and 10-14 and 16-20 on appeal, under 35 U.S.C. §102(b), as being allegedly anticipated by Will is improper.

In the Final Rejection dated March 12, 2003, of the finally rejected claims, independent Claims 1 and 10 and 16 and 19 of the instant application were rejected under 35 U.S.C. §102(b) as being allegedly unpatentable over Will. As the basis for the rejection of Claim 1 (and Claims 10, 16 and 19), the Examiner relies on Figure 8 of Will, and particularly the curve labeled 52 in Figure 8.

The Will patent is directed to a digital watch having a scroll wheel (thumbwheel) functionality for navigating through menus, input text etc., and describes how the amount of movement of a designation of a menu item on the display screen results from physical movement of the thumbwheel at different rates. According to Will, and particularly the curve labeled 52 in Figure 8, there is utilized the speed with which the thumbwheel is turned (rate of movement) to control how fast things (hour/minute hand indicators) change on the display. This is most clearly evident in Figure 8 of Will which shows the x-axis as the rate of thumbwheel movement as

dictating how fast the display indictors change. That is, when physical thumbwheel manipulation is such that the thumbwheel movement exceeds a rate threshold (as described in Figure 8 and at Col. 7, line 66- Col. 8, lines 29 of Will) the incremental changes of display movement on the display screen is correspondingly increased. Determining a "rate of movement" in Will does not imply, however, a counting of quantum scroll events per a unit time, and Will specifically speaks to this as will be described, *infra*. The essence of Will's cursor display control is that, a user of the Will device may keep moving the thumbwheel in one direction at a constant "rate" in a "slow" mode to result in a magnitude of a screen movement for the given thumbwheel movement in "small" increments without ever automatically transitioning to a "fast" mode. Otherwise, a user of the Will device may physically move the thumbwheel in a direction at a faster constant "rate" resulting in a "fast" mode of operation wherein the magnitude of a screen movement for the given thumbwheel movement is commensurate. From Figure 8, curve 52 of Will, it is assumed that if the user's thumbwheel motion rate of Will decreases after operating in the "fast" mode, cursor movement will transit back to the slower mode. Thus, in Will, cursor speed control is dynamic only in the sense that it is directly commensurate with physical user manipulation of the wheel.

With regard to the present Appeal, the Examiner alleges that the left part of the curve 52 in Figure 8 of Will shows receiving first scroll signals from the scroll device to incrementally advance a time keeping display indicator in a first direction according to fine-grain time increments. Further, the Examiner alleges that the claimed step of counting the received first scroll signals is depicted by the horizontal axis in Figure 8 of Will which shows monitoring of the rate of thumbwheel movement. However, it is respectfully submitted that the Examiner's reliance on Will for teaching this limitation is misplaced. As mentioned *supra*, the calculation of a display movement in Will is described in Will, e.g., at Col. 12, line 62 – col. 13, lines 16 supporting Will's Figure 13 describing the software architecture of the Will digital device. As

stated in Will at Col. 13, lines 12-16, for example, physical display movement in Will actually results from 1) the amount of actual physical movement of the thumbwheel; 2) the speed of the thumbwheel as mentioned with regard to Figure 8, curve 52, and 3) the type of the screen and menu display. Determining a "rate of movement" in Will is clearly complex, as Will describes at Col. 12, line 62 – Col. 13, line 6, a step 242 requiring a time measurement, particularly, a determination of the time elapsed between successive pulses received (corresponding to encoder pulses received in response to physical thumbwheel movement). From the time difference measured, a corresponding distance of thumbwheel movement is calculated which is utilized to determine corresponding fast or slow movement on the screen display (Step 243, Figure 13 of Will). Thus, there is no single statement or teaching in Will that suggests simply "counting" the received scroll events to determine cursor display rate of movement. Will needs to know how fast the thumbwheel moves in time measurements, and not the instantaneous "count" of received scroll signals (or scroll events).

The present invention, as set forth in Claims 1, 10, 16 and 19 functions in a novel and unobvious way. Respectfully, the present invention does not measure the speed or rate of movement of the scroll wheel to decide on fine/coarse grain changes on the display as Will. Rather, the present invention implements the consistency of movement in the same direction to decide fine/coarse grain changes. Particularly, to implement dynamic speed control according to the invention, the consistency of movement in a particular direction is measured by simply counting received scroll signals or events (e.g., "clicks") in the manner as set forth in the present invention by an algorithm described on pages 17 and 18. This is a key difference over Will. In the invention, user control of display cursor is seamless in the respect that moving a scroll device in one direction at a constant "rate" in a "slow" mode will result in a magnitude of a screen movement for the given thumbwheel movement in smaller increments but however, will

seamlessly transition to a "fast" mode, after a predetermine of received scroll signals or events is received.

Thus, in sum, Will does not anticipate the Appealed Claim 1 that is directed to first receiving first scroll signals from the scroll device to incrementally advance a time keeping display indicator in a first direction according to fine-grain time increments and wherein the received first scroll signals are simply counted and, thereafter, in response to continued receipt of first scroll signals, the time keeping display minute indicator is seamlessly advanced according to coarse-grain time increments in a first direction when a count of said received first scroll signals exceeds a predetermined number- the said coarse-grain time increments being greater than the fine-grain time increments, whereby fewer scroll device manipulations are required to achieve a desired time set without notice to the user. The scroll speed control system and method of the present invention does not need to know how fast the wheel moves- the rate of thumbwheel movement is not determined. The present invention relies on display indicator movement only on the basis of scroll signal count (independent of the rate of thumbwheel manipulation) and direction (as set forth in amended Claim 1) or scroll signal events (Claims 16 and 19). Respectfully, this limitation has already been present in Claim 10 which states that dynamic speed control of the indicator is provided by advancing said indicator according to fine-grain and coarse-grain increments in response to a count of said received scroll events and said tracked direction.

The rejection of Claims 8 and 15 on appeal under 35 U.S.C. §103(a), as being allegedly unpatentable over Will is improper.

Claim 8 is indirectly dependent upon the independent Claim 1, the patentability of which has been demonstrated in view of the foregoing and Claim 15 is indirectly dependent upon Claim 10 the patentability of which has been likewise demonstrated.

9. CONCLUSION

In view of the remarks submitted hereinabove, the cited Will reference does not anticipate Claims 1, 3, 7, and 10-14 and 16-20 on appeal. Nor does Will render Claims 8 and 15 unpatentable under 35 U.S.C. §103(a) grounds. Thus, Appellant submits that the §102(b) and §103(a) rejections are in error and must be reversed.

Respectfully submitted,

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APPENDIX

CLAIMS ON APPEAL: CLAIMS 1-20

Application Serial No. 09/607,801

1. A method for dynamically controlling speed of a scroll device providing scroll functions for setting time of a time keeping display having minute and hour indicators, said scroll device generating scroll signals representing scroll events and communicating said signals to a control device for advancing said minute and hour indicators in response thereto, said method comprising:

a) receiving first scroll signals from said scroll device and, in response to received first scroll signals, incrementally advancing a time keeping display minute indicator in a first direction according to fine-grain time increments, and simultaneously tracking the advancing direction;

b) counting said received first scroll signals; and,

c) thereafter, in response to continued receipt of first scroll signals, seamlessly advancing said time keeping display minute indicator according to coarse-grain time increments in said first direction when a count of said received first scroll signals exceeds a predetermined number, said coarse-grain time increments greater than said fine-grain time increments, whereby fewer scroll device manipulations are required to achieve a desired time set without notice to the user.

2. The method as claimed in Claim 1, further comprising the steps of:

d) receiving second scroll signals in response to manipulating said scroll device to change direction of said time keeping display minute indicator;

e) determining said change in direction; and,

f) incrementally advancing said time keeping display minute indicator in said changed direction according to fine-grain time increments,

wherein said time keeping display minute indicator movement is changed from coarse-grain time movement in said first direction to fine-grain time movement in said changed direction.

3. The method as claimed in Claim 1, wherein said scroll device generates scroll events in response to manipulation thereof, said generated scroll signals corresponding to said scroll events, wherein said fine-grain time increments of said display minute indicator corresponds to one (1) minute increment per scroll event.

4. The method as claimed in Claim 3, wherein said coarse-grain time increments of said display minute indicator corresponds to five (5) minutes increments per scroll event.

5. The method as claimed in Claim 4, wherein said step c) of providing coarse-grain time increments includes incrementally advancing said display minute indicator a pre-determined number of time increments per one or more scroll events and increasing said pre-determined number for each subsequent one or more scroll events.

6. The method as claimed in Claim 5, further comprising the steps of:

receiving second scroll signals in response to manipulating said scroll device to change direction of said time keeping display minute indicator;

determining said change in direction; and,

incrementally advancing said time keeping display minute indicator in said changed direction according to fine-grain time increments, and simultaneously tracking said advancing direction.

7. The method as claimed in Claim 1, further including the step of implementing said scroll device for incrementing advancing a time keeping display hour indicator in a first direction according to received first scroll signals, and simultaneously tracking said advancing direction.

8. The method as claimed in Claim 7, further comprising the steps of:

receiving second scroll signals in response to manipulating said scroll device to change direction of said time keeping display hour indicator;

determining said change in direction; and,

incrementally advancing said time keeping display hour indicator in said changed direction according to fine-grain time increments, and simultaneously tracking said advancing direction.

9. The method as claimed in Claim 7, wherein said scroll device further generates click events in response to manipulation thereof, and generates third scroll signals corresponding to

said click events for communication to said control device, said method further comprising the step of: independently enabling scroll device control of either said time keeping display minute indicator or said time keeping display hour indicator upon receipt of a third scroll signal.

10. A system for dynamically controlling scrolling functions for a display indicator capable of navigating through a high-resolution display provided in a wearable appliance that displays textual or graphical content, said system comprising:

a scroll device for manipulation by a user to provide said scrolling functions for advancing said indicator, said scroll device generating scroll events; and,

a control device for receiving said scroll events, tracking an advancing direction of said indicator by counting received scroll events, and providing dynamic speed control of said indicator by advancing said indicator according to fine-grain and coarse-grain increments in response to a count of said received scroll events and said tracked direction, wherein said dynamic speed control is seamless to the user.

11. The system as claimed in Claim 10, wherein said control device comprises a mechanism for determining a predetermined number of said fine-grain increments, whereby upon continued manipulation of said scroll device, after determination of a predetermined number of said fine-grain increments, said control device enabling coarse-grain advancement of said display indicator per scroll event in said first direction to thereby advance to a desired display position with fewer scroll device manipulations.

12. The system as claimed in Claim 11, wherein said appliance provides time keeping functions, said indicator including a time keeping display minute and hour indicators for a time keeping function, whereby, said control device enables incremental fine-grain advancement of said time keeping display minute indicator per scroll event in a first direction, and, upon continued manipulation of said scroll device, after determination of a predetermined number of said fine-grain increments, enables coarse-grain advancement of said time keeping display minute indicator per scroll event in said first direction to thereby achieve a desired time set with fewer scroll device manipulations.

13. The system as claimed in Claim 11, whereupon determination of user manipulation of said scroll device to effect a change in advancing direction of said indicator, said control device enables incremental fine-grain advancement of said indicator per scroll event in said changed direction.

14. The system as claimed in Claim 11, wherein said scroll device is a roller wheel.

15. The system as claimed in Claim 11, wherein said scroll device is a mouse wheel.

16. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for dynamically controlling scrolling functions for a display indicator capable of navigating through a display provided in a wearable appliance that displays textual or graphical content, said appliance implementing a

scroll device for generating scroll events in response to user manipulation thereof, said method steps including the steps of:

a) receiving scroll events for incrementally advancing said indicator per scroll event in a first direction to provide fine-grain scroll indicator movement, and simultaneously tracking the advancing direction;

b) counting said received scroll events; and,

c) thereafter, in response to continued receipt of scroll events, providing in a manner that is seamless to a user, coarse-grain scroll indicator movement by advancing said indicator for a pre-determined number of increments per scroll event in said first direction when a count of said received scroll events exceeds a predetermined number, said coarse-grain scroll indicator movement greater than said fine-grain scroll indicator movement, whereby fewer scroll device manipulations are required to achieve a desired scroll indicator position on said display.

17. The program storage device readable by a machine as claimed in Claim 16, further comprising the steps of:

d) receiving scroll events in response to manipulating said scroll device to change direction of said indicator movement;

e) determining said change in direction; and,

f) incrementally advancing said indicator per received scroll event in said changed direction to provide fine-grain scroll indicator movement.

18. The program storage device readable by a machine as claimed in Claim 17, wherein said appliance provides time keeping functions, said indicator including a time keeping display minute and hour indicators for a time keeping function.

19. A method for dynamically controlling scrolling functions for a display indicator capable of navigating through a display provided in a wearable appliance that displays textual or graphical content, said appliance implementing a scroll device for generating scroll events in response to user manipulation thereof, said method comprising the steps of:

a) receiving scroll events for incrementally advancing said indicator per scroll event in a first direction to provide fine-grain scroll indicator movement, and simultaneously tracking the advancing direction;

b) counting said received scroll events; and,

c) thereafter, in response to continued receipt of scroll events, providing in a manner that is seamless to a user, coarse-grain scroll indicator movement by advancing said indicator for a pre-determined number of increments per scroll event in said first direction when a count of said fine-grain indicator increments exceeds a predetermined number, said coarse-grain scroll indicator movement greater than said fine-grain scroll indicator movement, whereby fewer scroll device manipulations are required to achieve a desired scroll indicator position on said display.

20. The method as claimed in Claim 19, further comprising the steps of:

d) receiving scroll events in response to manipulating said scroll device to change direction of said indicator movement;

e) determining said change in direction; and,

f) incrementally advancing said indicator per received scroll event in said changed direction to provide fine-grain scroll indicator movement.